**PATENT**

**Attorney Docket No. RS150**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

KEVIN WESLING

Serial No. 10/707,136

Filed: November 21, 2003

For: Cable Guide For A Bicycle Suspension Fork

Group Art Unit 3611

Examiner: Lee Sin Yee Lum Vannucci

# APPEAL BRIEF

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In regard to the above referenced application, Appellant submits this Appeal Brief.

## I. REAL PARTY IN INTEREST

The real party in interest is SRAM Corporation. SRAM Corporation's right to take action in the subject application was established by virtue of an Assignment from the inventors to SRAM Corporation recorded at Reel/Frame 014149/0350.

## II. RELATED APPEALS AND INTERFERENCES

The undersigned legal representative of Appellant hereby confirms that there are no known appeals or interferences relating to the present application, or any parent application, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## III. STATUS OF THE CLAIMS

Claims 1-4 are pending in the application. No claims have been allowed. Claims 1-4 stand rejected under a final office action mailed January 6, 2006. Rejection of each of the claims 1-4 are being appealed.

## IV. STATUS OF THE AMENDMENTS

No amendment has been filed subsequent to final rejection.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention is a cable guide that directs a control cable extending between an actuator, such as a lever located on a handlebar of a bicycle, and a bicycle suspension system. The cable guide is located on a crown of the bicycle suspension system. Claim 1 is an independent claim. None of the claims 1-4 have means plus function or step plus function elements as permitted by 35 USC §112, sixth paragraph. Independent claim 1 recites a cable guide 10 for a control cable 14 extending between an actuator and a suspension system 16 having a crown 12 connecting two parallel tubular bodies 18, 20 to a steerer tube 22 (paragraph [0015], lines 3-5; paragraph [0016], lines 1-2). The cable guide 10 includes a housing 38 integrally formed with the crown 12 (paragraph [0018], lines 1-2). The housing 38 includes a bore 40 extending therethrough for receiving the control cable 14 (paragraph [0018], lines 5-8).

## VI. GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-4 are obvious under 35 U.S.C. § 103(a) in view of Kuo (US 6,767,024).

## VII. ARGUMENT

The examiner bears the burden of establishing a prima facie case of obviousness under 35 USC 103(a). To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations (MPEP 2143).

Claims 1-4 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo (US6767024). Kuo fails to teach or suggest all the claimed limitations of the present invention. Claim 1 of the present invention recites a cable guide housing integrally formed with a crown of a bicycle fork. Kuo does not teach or suggest a cable guide housing integrally formed with a crown of a bicycle fork. In an Office Action mailed January 26, 2006, Examiner stated that Kuo disclosed a cable guide housing that includes elements 61, 65 and 651 and in an Advisory Action dated March 22, 2006, Examiner refers back to the Office Action mailed January 26, 2006 and states that the housing comprises a different group of elements adjacent the unidentified crown; 62, 611- 613, B. Examiner further states that Kuo does not explicitly disclose the housing as "integrally formed" with the crown, however, this configuration is disclosed because the housing is rigidly secured with the outer surface of the crown. Appellant respectfully disagrees with Examiner.

In Kuo, none of the elements 61, 65 and 651 are integrally formed with the crown. Likewise, none of the elements 62, 611-613, B are integrally formed with the crown. Instead, a rotatable cap or spool 61 is connected to a base member 62, the base member 62 being

threadably connected to a top of the inner tube 52, not to the crown. Further, the control cable block 651 is attached to the clamp ring 65, the clamp ring 65 being securely mounted to the base member 62, the base member 62 threadably connected to the top of the inner tube 52, finally the inner tube 52 connected to the crown (see specification at col. 2, lines 62-67; col. 3, lines 1-3). Accordingly, none of the elements 61, 65, and especially 651, are connected or rigidly secured to the crown. Additionally, a positioning bolt 611 extends through a center of the cap 61 and is fixed to the base member 62 so that the cap 61 is rotatable relative to control cable block 651 and clamp ring 65, therefore, bolt 611 and cap 61 cannot be integrally formed with these elements 651, 65 or with the crown (see specification at col. 2, lines 64-66). Furthermore, a torsion spring 612 is connected to the underside of the cap 61 and one end of the spring 612 is positioned by a pin 613 extending from a top of the cap 61, the other end of the spring 612 is positioned to the base member 62 by another pin 662 on the base member 62. The torsion spring 612 allows the cap 61 to be rotated when the lever 22 is rotated (see specification at col. 4, lines 17-23). Therefore, the elements 611-613 are also not integrally formed with the clamp ring 65 or the cable block 651. Examiner is collectively pointing to arbitrary elements as comprising the housing simply because they are proximate or adjacent the crown, including the rotatable spool 61 which functionally cannot be integrally formed with the crown.

Finally, in the Kuo device, because the clamp ring 65 - to which cable block 651 is connected - is connected to base member 62, which in turn is threaded to the inner tube 52, the resulting orientation of the cable block 651 relative to the crown varies depending on the orientation of the base member 62 which is threadably connected to the inner tube 52. Accordingly, in the Kuo device, the clamp ring 65 must be loosened and rotated to properly align the cable B relative to the spool 61. This problem is avoided in the claimed invention where the cable guide housing is formed integrally with the crown, not with any component of the legs of the suspension system. For these reasons, none of the elements 61, 62, 65, 611-613, B or 651 constitute a housing integrally formed with the crown as recited in claim 1. Therefore, the rejection of claim 1 should be withdrawn.

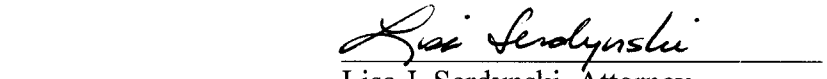
Regarding claim 4, Examiner stated that the language "forged together" refers to the manner in which the housing and the crown are made, which is patentably immaterial. Applicant respectfully disagrees with Examiner. The limitation "forged together" is used to describe physical characteristics of the product. These words are limitations on the structure of the invention, not words describing how the invention is made. See e.g., In re Garnero, 412 F.2d 276, 162 U.S.P.Q. 221 (C.C.P.A. 1969) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting the terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.) Accordingly, the limitation "forged together" is a structural limitation that should be given patentable weight.

## VIII. CLOSING REMARKS

For the foregoing reasons, Appellant submits that the rejection of claims 1-4 pursuant to 35 USC §103(a) is improper, and that claims 1-4 are, therefore, patentable. Accordingly, Appellant respectfully requests that the rejections of the Examiner be reversed.

Respectfully Submitted,

KEVIN WESLING



Lisa J. Serdynski, Attorney
Registration No. 40,307
SRAM Corporation
1333 N. Kingsbury, 4th Floor
Chicago, IL 60622
(312) 664-3652

## IX. CLAIMS APPENDIX

1. A cable guide for a control cable extending between an actuator and a suspension system having a crown connecting two parallel tubular bodies to a steerer tube, said cable guide comprising: a housing integrally formed with the crown, the housing having a bore extending therethrough for receiving the control cable.

2. The cable guide of claim 1 wherein the suspension system further includes a spool disposed on one end of the tubule bodies for winding and unwinding the control cable, the housing configured such that a portion of the control cable extending between the housing and the spool lies substantially in a plane of the spool.

3. The cable guide of claim 2 wherein the control cable includes an inner wire encased in an outer casing, the housing having a radially extending flange for engaging the outer casing while permitting the inner wire to extend through the bore.

4. The cable guide of claim 1 wherein the housing and the crown are forged together.

## X. EVIDENCE APPENDIX

Enclosed please find a copy of the Kuo, United States Patent No. 6,767,024, reference relied upon by Examiner as to the grounds of rejection to be reviewed upon appeal.

## XI. RELATED PROCEEDINGS APPENDIX

None

US006767024B1

(12) **United States Patent**
**Kuo**

(10) **Patent No.: US 6,767,024 B1**
(45) **Date of Patent: Jul. 27, 2004**

(54) **FRONT SUSPENSION SYSTEM WITH LOCK DEVICE**

(76) Inventor: **Yung-Pin Kuo**, No. 55, Alley 121, Lane 175, Kuo Shen Rd., Chang Hwa City (TW)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/623,700**

(22) Filed: **Jul. 22, 2003**

(51) **Int. Cl.**[7] ..... **B62K 21/00**
(52) **U.S. Cl.** ..... **280/276**; 280/275; 74/500.5; 74/502.2; 188/285
(58) **Field of Search** ..... 280/276, 275, 280/283, 284; 74/500.5, 501.6, 502.2, 519; 188/281, 272, 282.4, 285, 300

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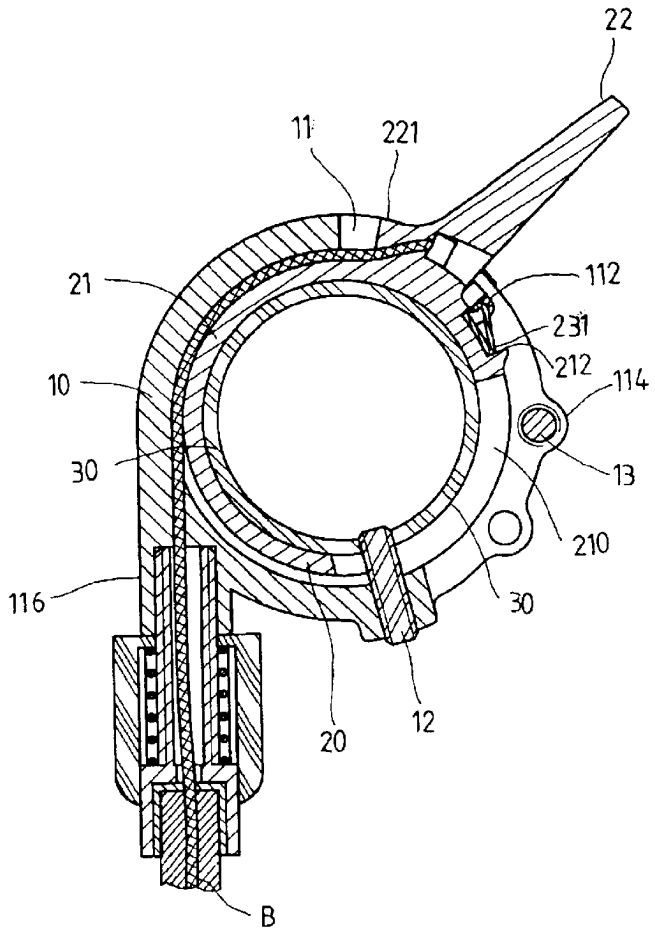
*Primary Examiner*—Daniel G. DePumpo
(74) *Attorney, Agent, or Firm*—Rosenberg, Klein & Lee

(57) **ABSTRACT**

A bicycle front suspension system includes two cylinders on the front fork and each cylinder includes an outer tube and an inner tube which is movably received in the outer tube. A cap is rotatably connected to the inner tube and connected to a rod. A control cable is connected between the cap and a lever which is rotatably engaged in a collar on the handlebar of the bicycle. The lever is rotated to operate the control cable so as to rotate the cap and the rod. The rotation of the rod controls the communication between two chambers in the inner tube so that the hydraulic fluid is controlled to make the cylinder to be locked or operative.

**6 Claims, 11 Drawing Sheets**



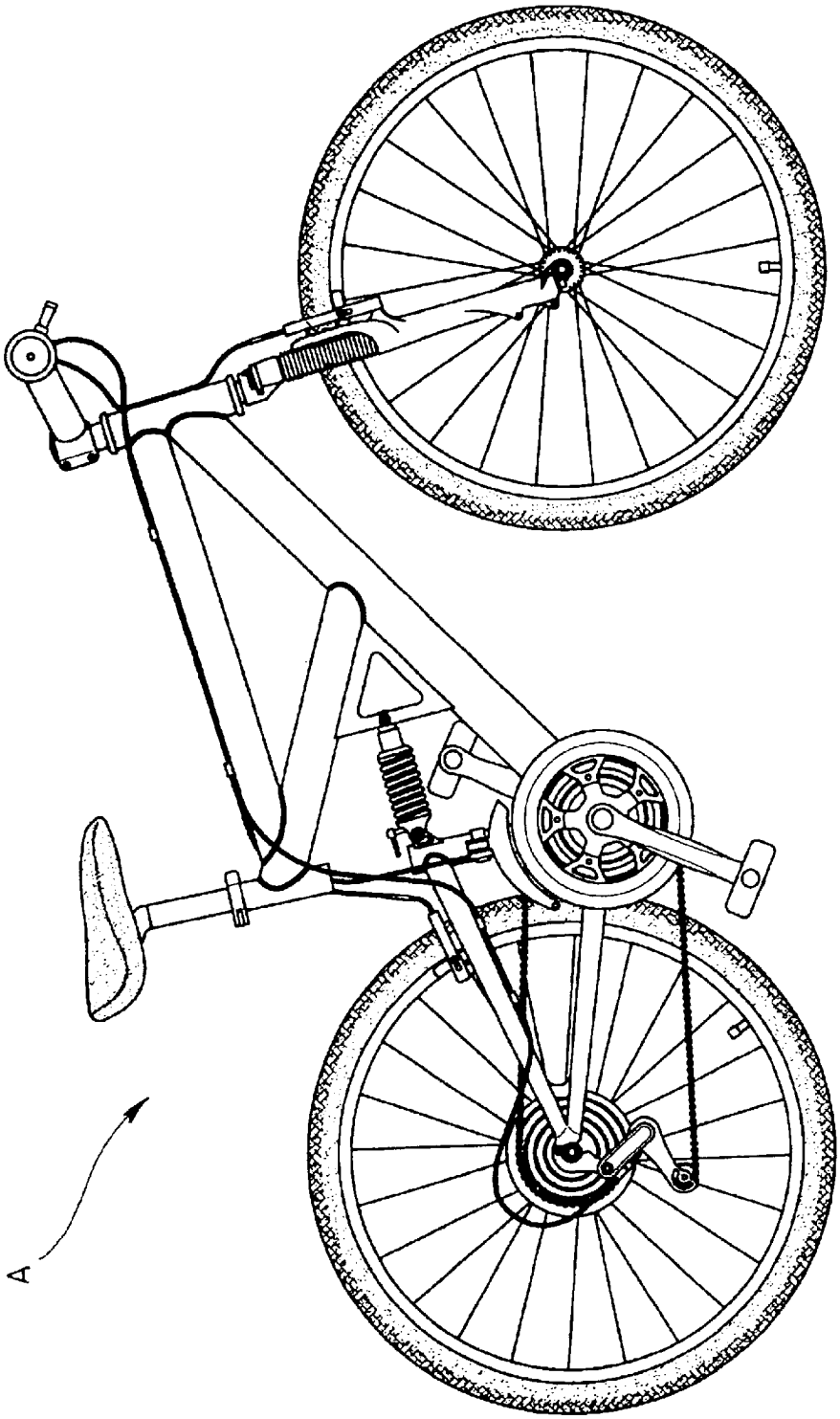



FIG.1

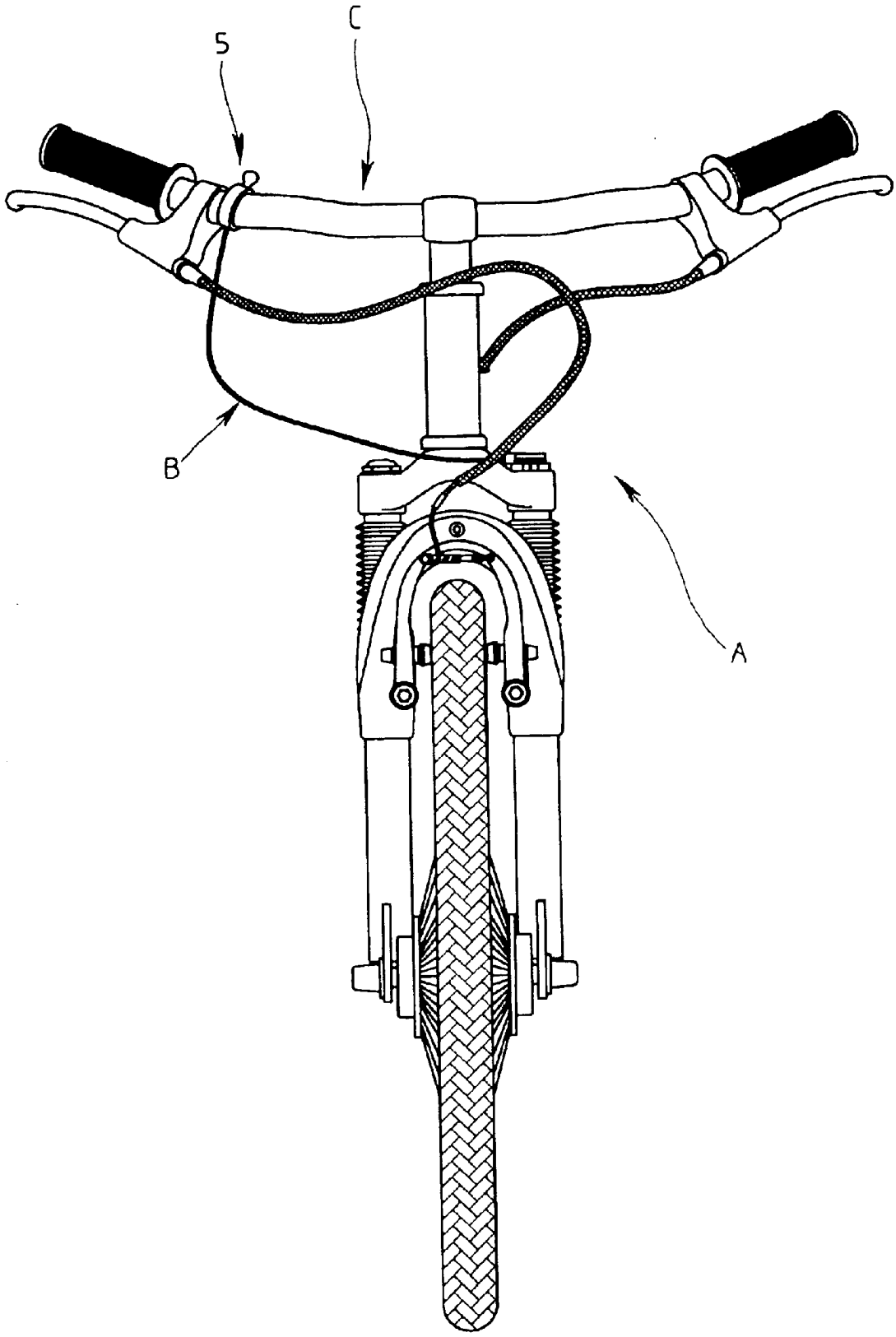



FIG.2

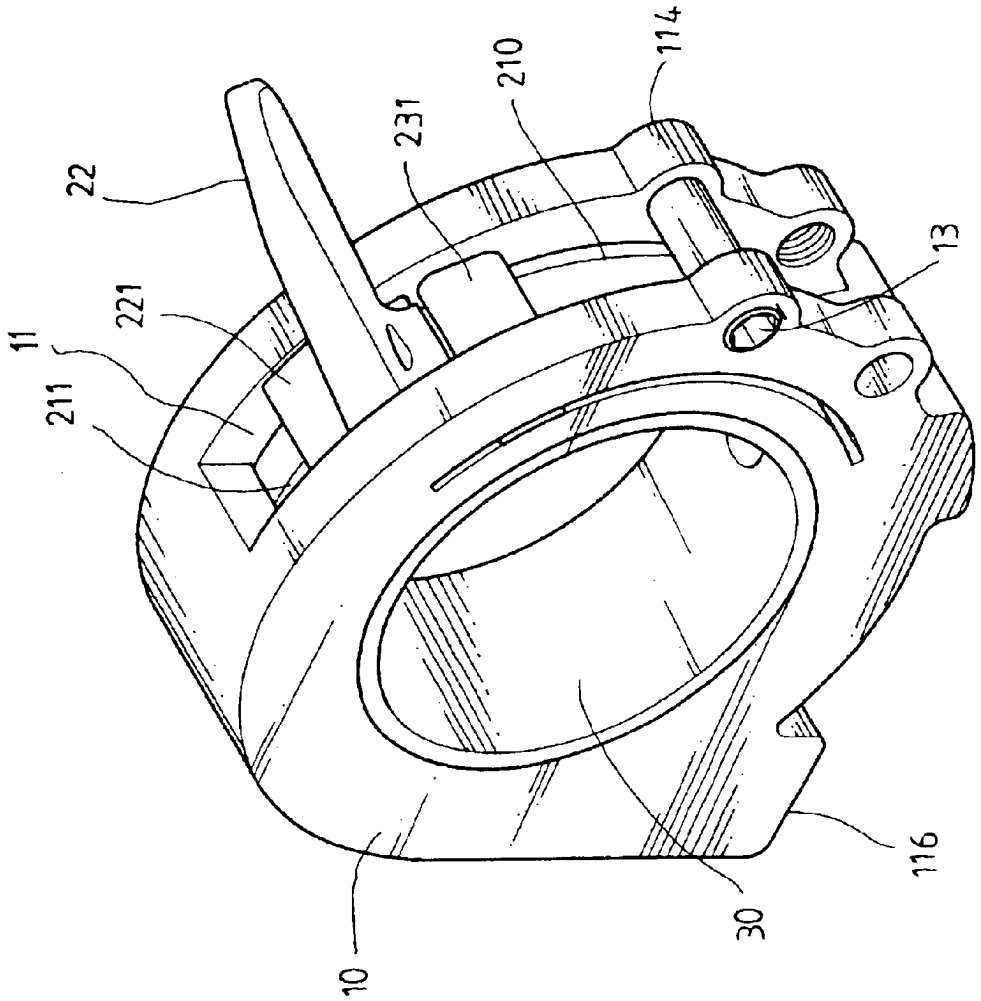



FIG.3

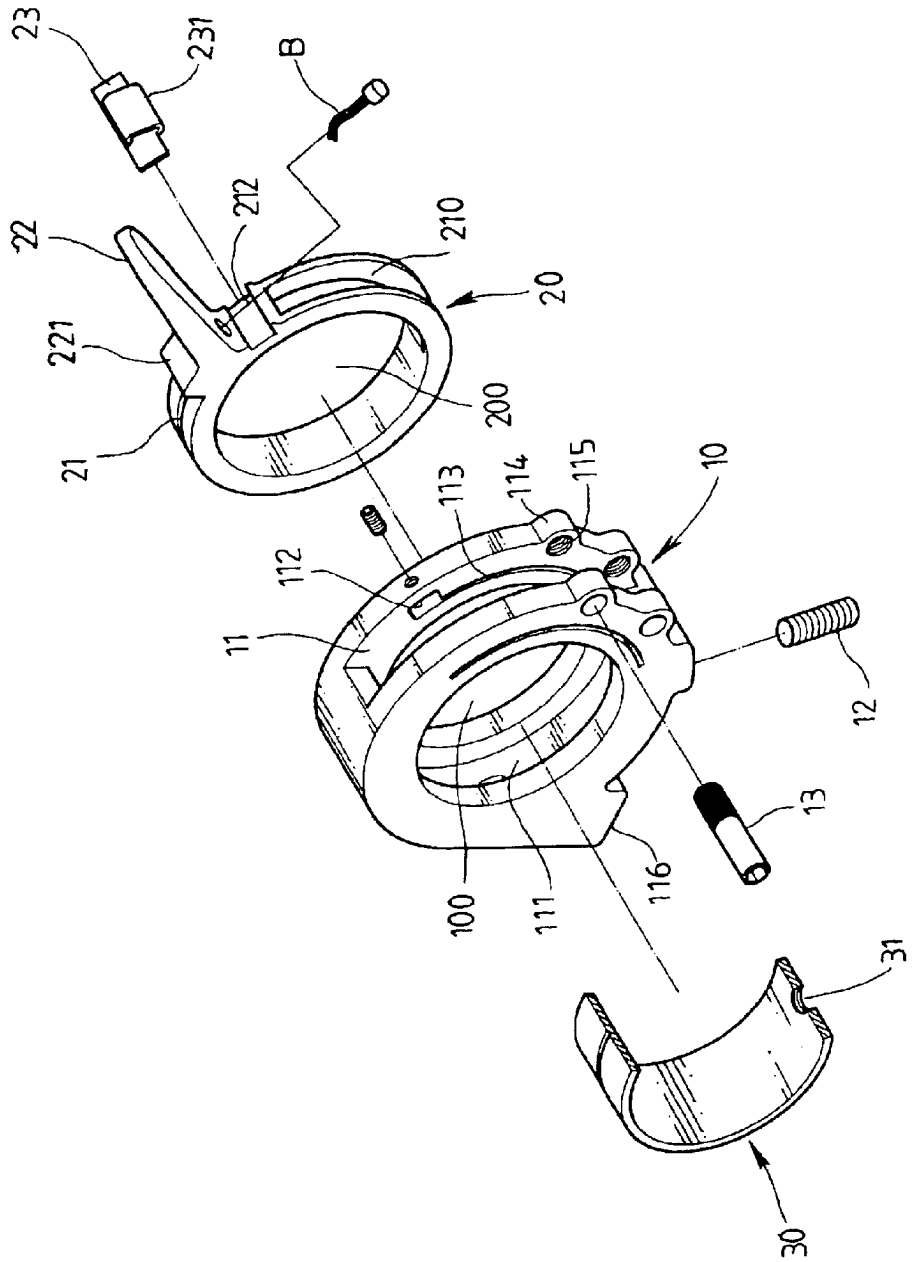

23
231
B
212
210
22
20
221
200
21
113
114
115
10
112
11
12
13
100
111
116
31
30

FIG.3A

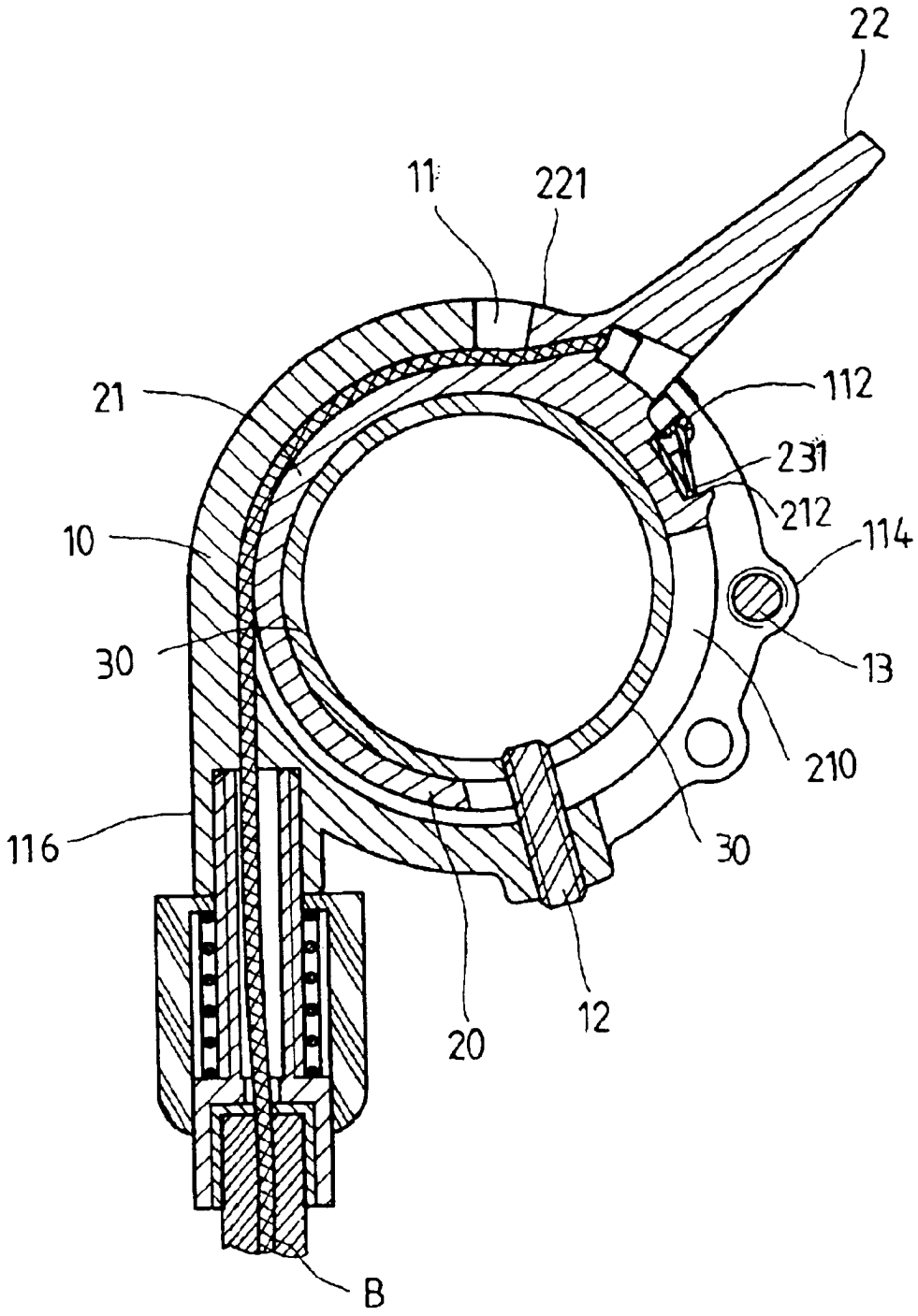



FIG.4

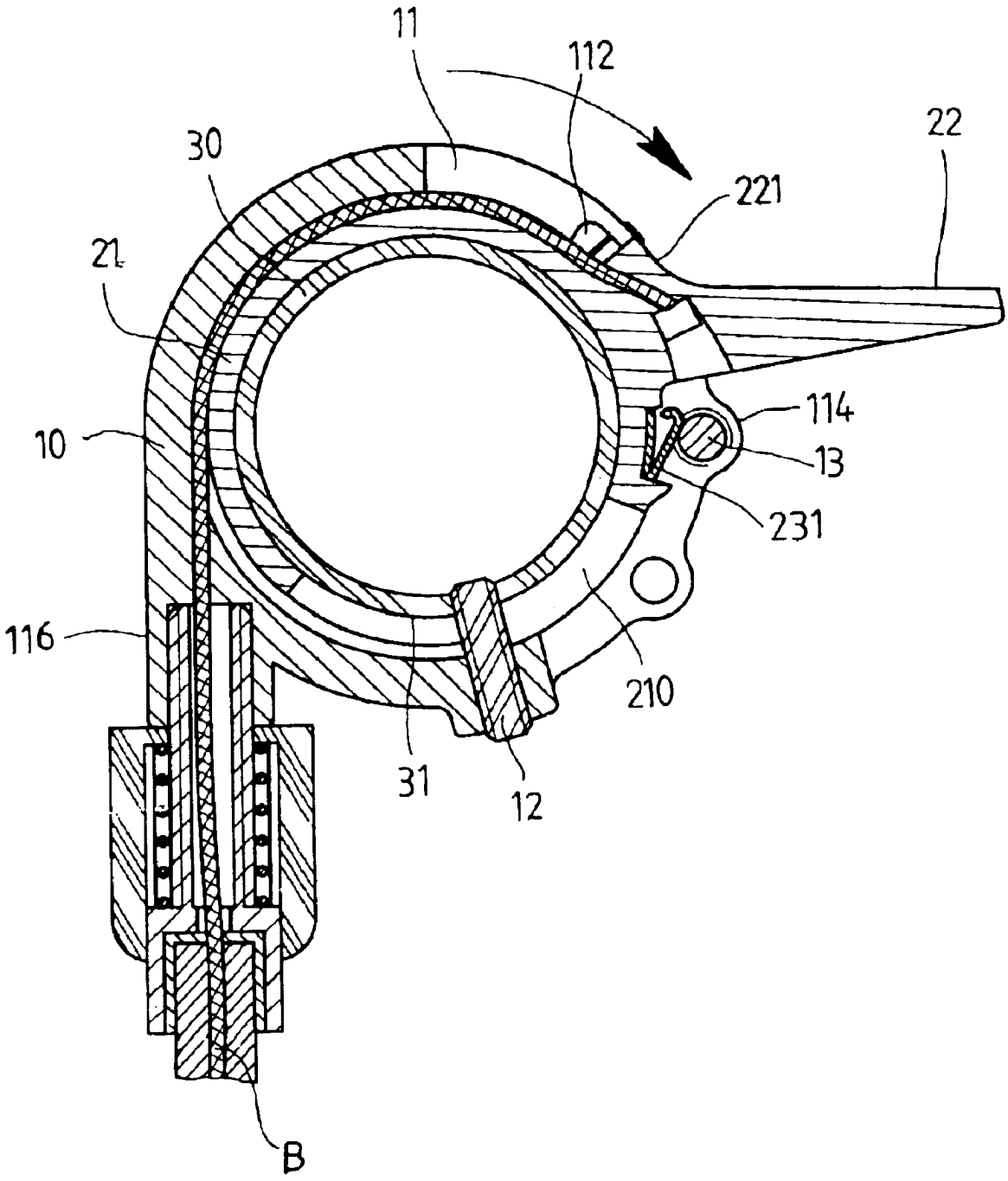



FIG.4A

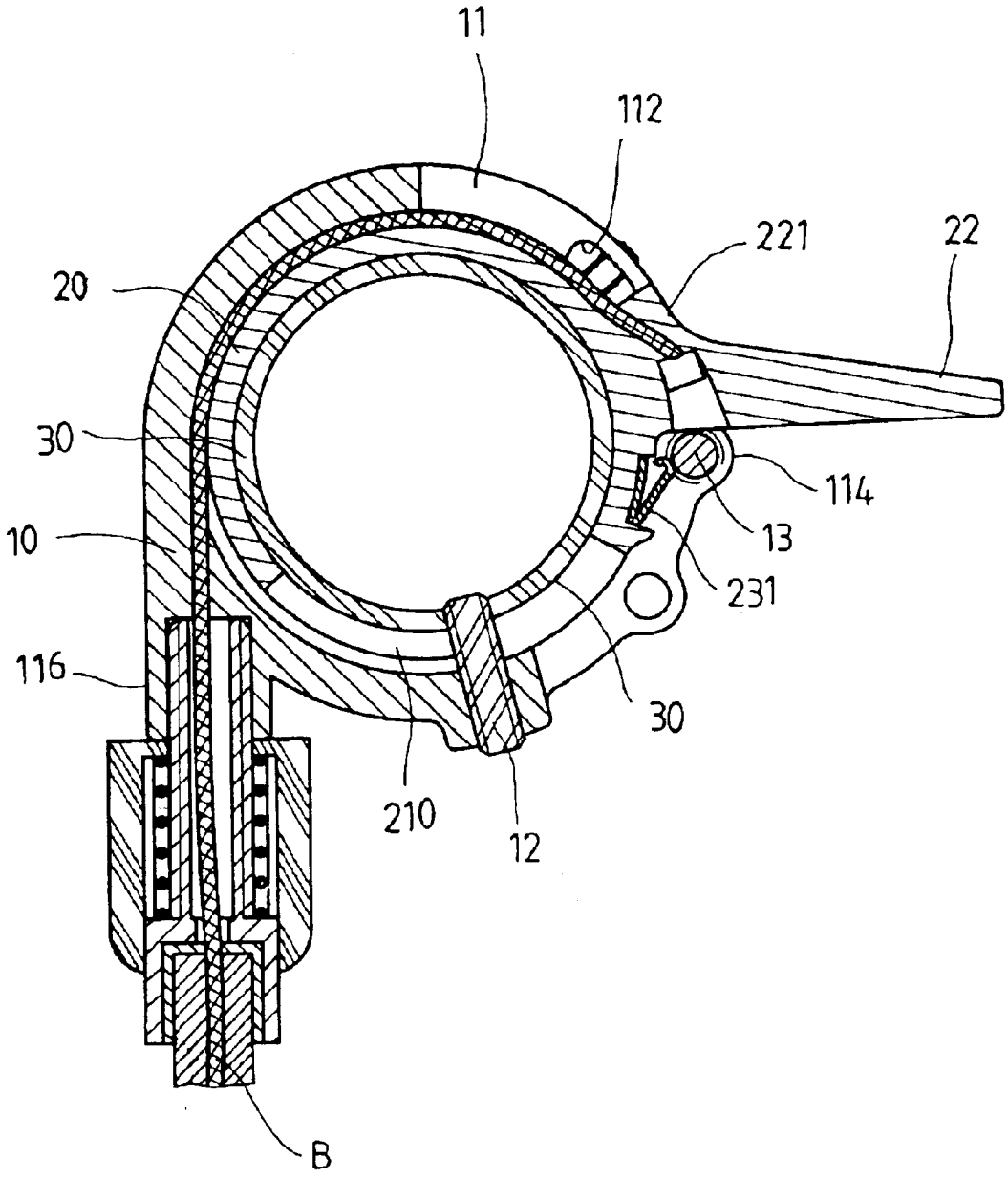



FIG.4B

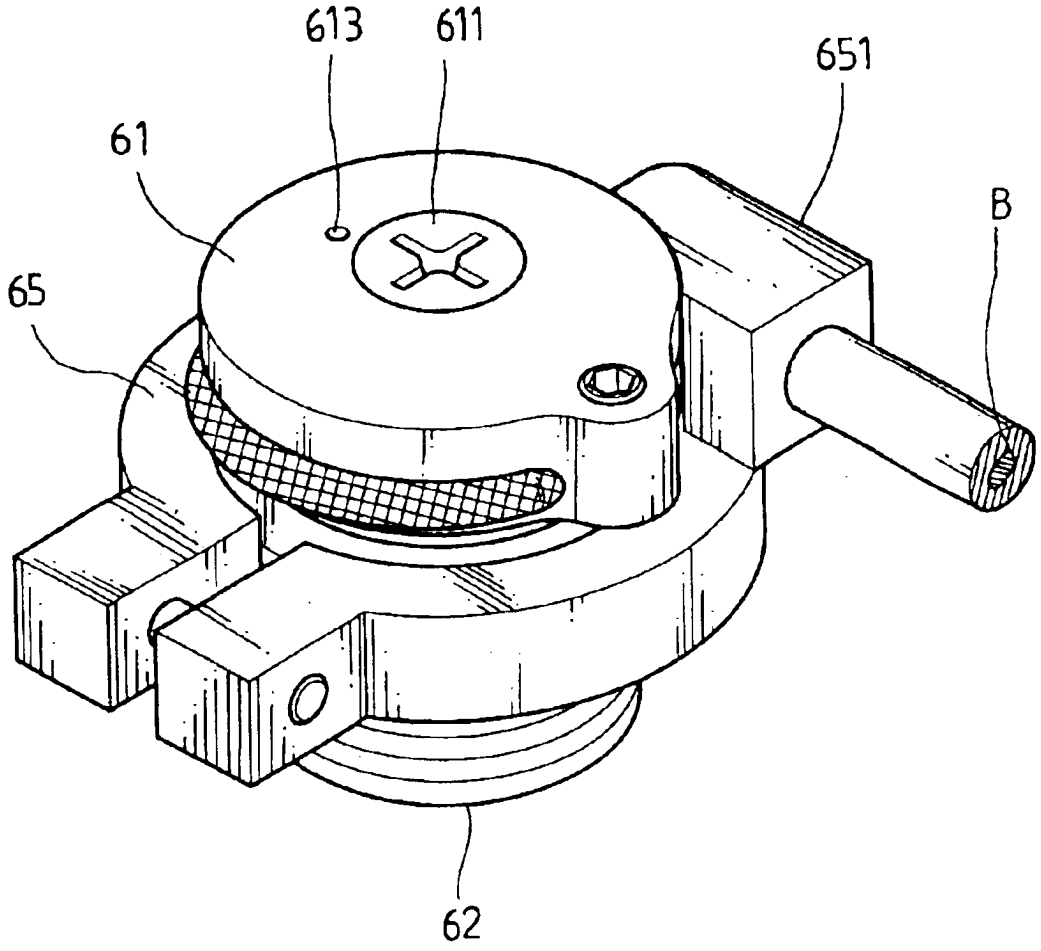



FIG.5

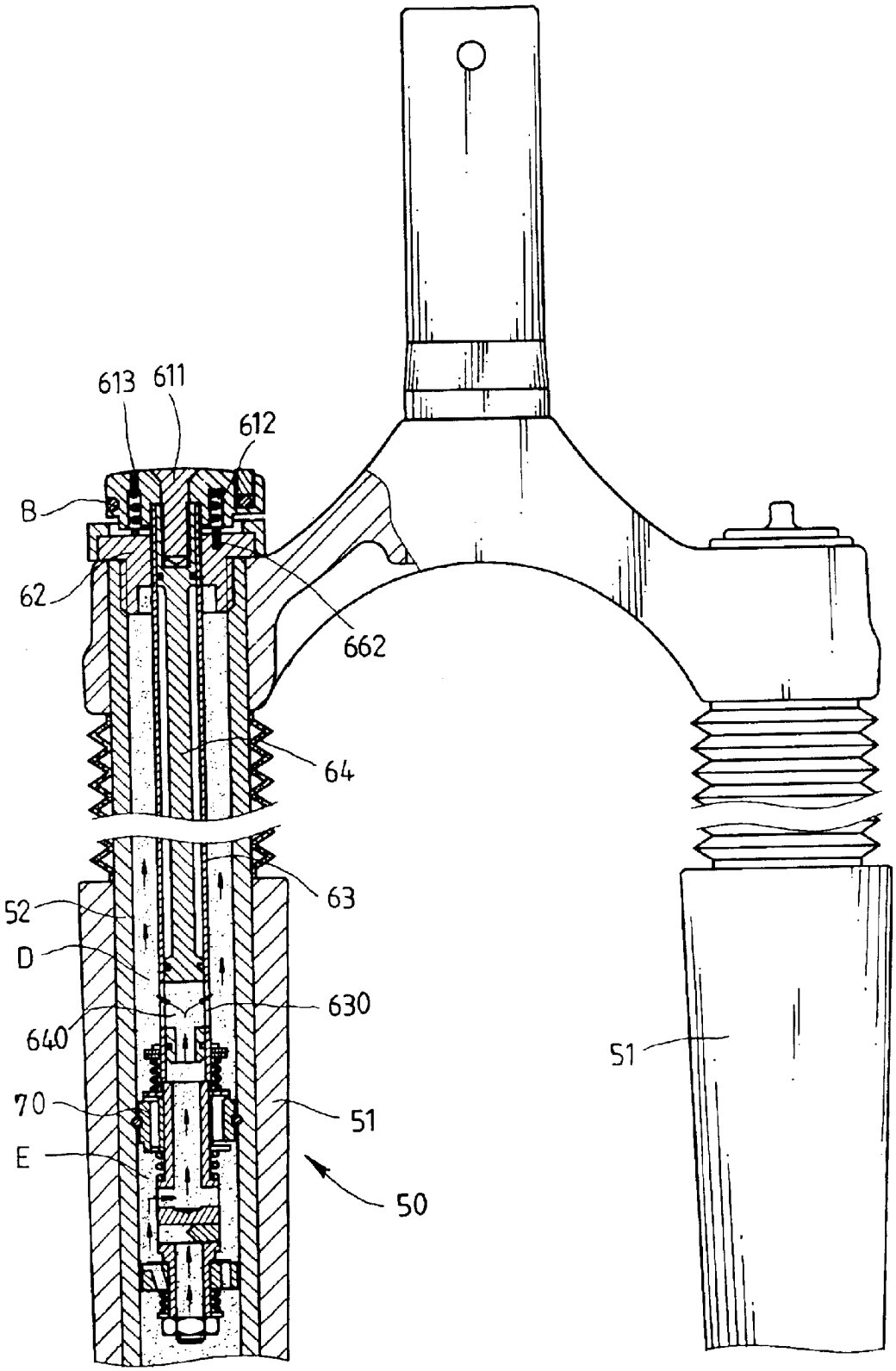



FIG.6

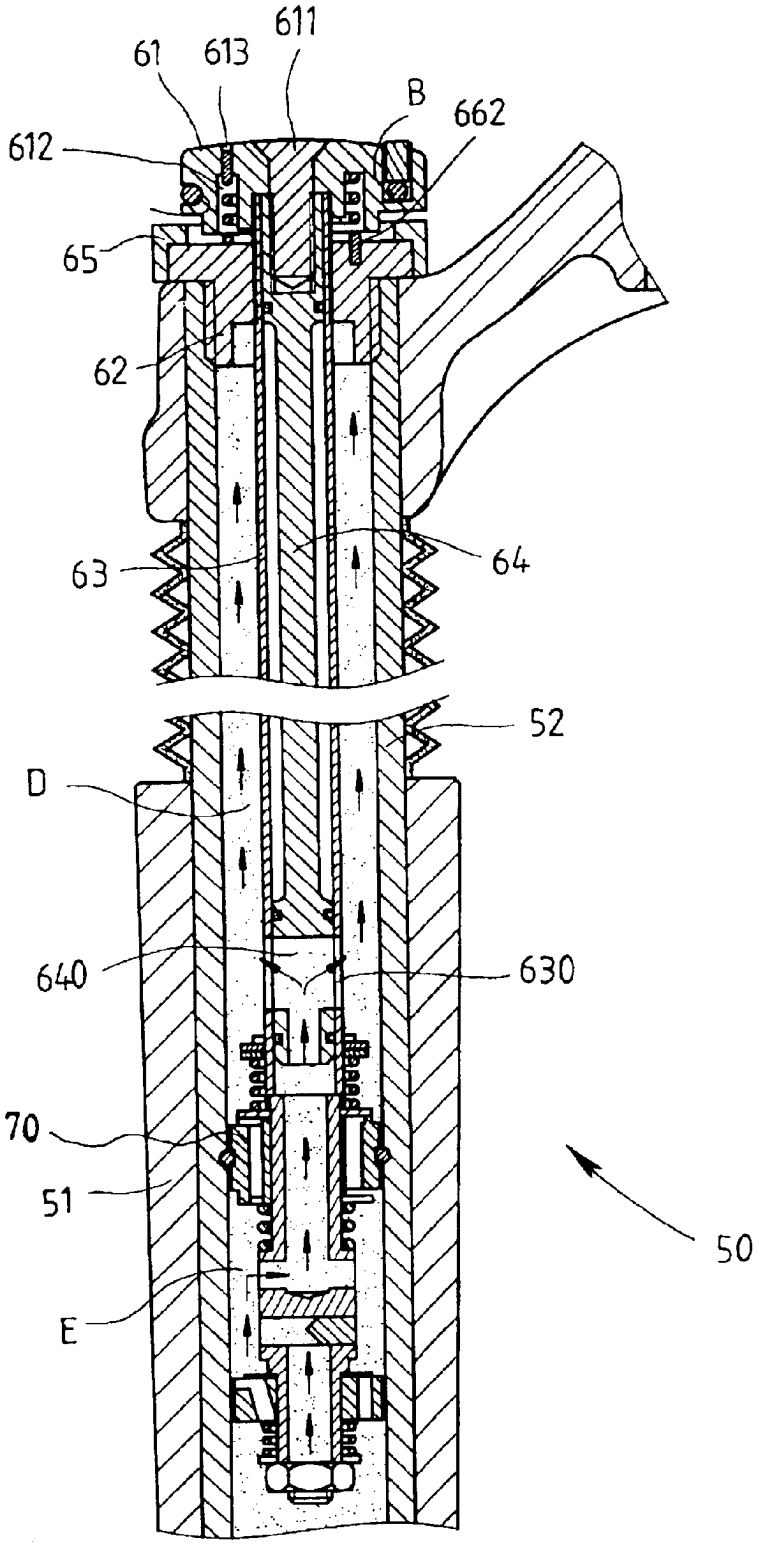



FIG.6A

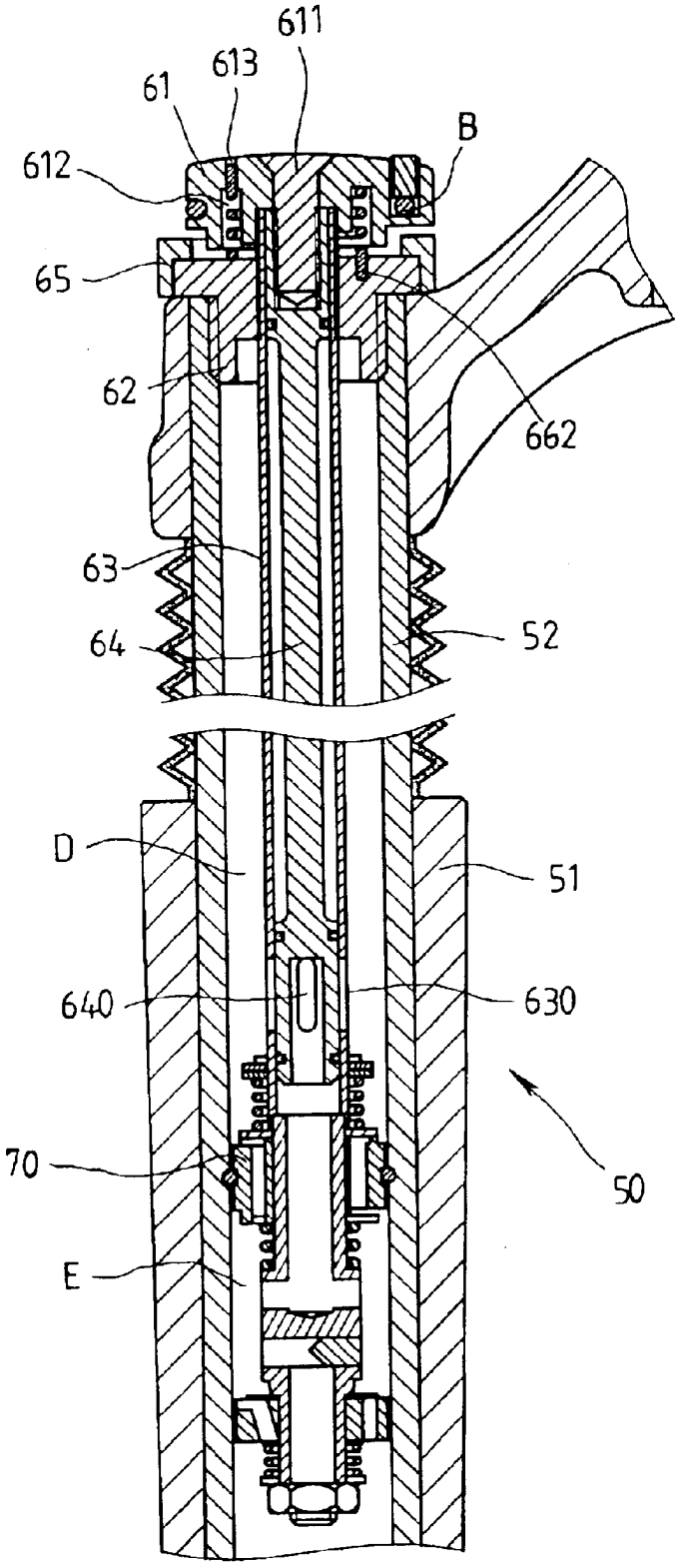



FIG.6B

# FRONT SUSPENSION SYSTEM WITH LOCK DEVICE

## FIELD OF THE INVENTION

The present invention relates to a bicycle front suspension system which is controlled by a controller on the handlebar so as to limit the hydraulic fluid from flowing in communication between two chambers in the suspension system.

## BACKGROUND OF THE INVENTION

A conventional bicycle front suspension device generally includes two cylinders on the front fork and each contains hydraulic fluid which flows between two chambers so as to let the inner portion be movable relative to the outer portion when a load is applied to the bicycle. The front suspension device is a popular device and provides the cyclists a comfortable riding condition regardless of the condition of roads. Nevertheless, this suspension device becomes a burden when the bicycle goes on an upward slope. Responsive to this, U.S. Pat. No. 6,217,049 discloses a lockout mechanism which allows the cyclists to lock the suspension device when the bicycle goes upward. However, the lockout mechanism is not convenient for the cyclist to operate because the adjusting pin is located at the position where the cyclist has to get off the saddle so as to access the adjusting pin.

The present invention intends to provide a bicycle front suspension device that has a controller on the handlebar so that the cyclist simply shifts a lever to lock or unlock the front suspension device.

## SUMMARY OF THE INVENTION

In accordance with one aspect of the present invention, there is provided a controller and a bicycle front suspension device. The controller comprises a first collar and a slot is defined radially through the first collar. A second collar is rotatably engaged in the first collar and a lever extends radially from the second collar. The lever extends through the slot and an engaging member is located on the second collar and beside the lever. A stop device is connected to the first collar and located cross over the slot.

A control cable has an end fixed to the second collar and the other end of the control cable is fixed to a cap of one of two suspension cylinders of the front suspension system. The cap is rotated between an operative position for allowing the suspension cylinder to absorb shock, and a lockout position for allowing the suspension cylinder to be locked.

The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side view to show the front suspension system on a bicycle;

FIG. **2** is a front view to show the control cable is connected between the controller and the front suspension system;

FIG. **3** is a perspective view to show the two collars of the controller of the present invention;

FIG. **3A** is an exploded view to show the two collars of the controller of the present invention;

FIG. **4** is a cross sectional view to show the lever is located at the operative position;



FIG. **4A** is a cross sectional view to show that the lever is rotated;

FIG. **4B** is a cross sectional view to show that the lever is rotated to the lockout position;

FIG. **5** is a perspective view to show the cap and the base member and the control cable is wrapped to the cap;

FIG. **6** shows the front suspension fork and one of the two cylinders is shown in cross section;

FIG. **6A** is a cross sectional view to show the cylinder is in operative condition, and

FIG. **6B** shows that the cap is rotated and the cylinder is in locked.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. **1** and **2**, the controller **5** as shown in FIG. **3** is connected to the handlebar "C" of the bicycle "A" and a control cable "B" is connected between the controller **5** and one of two cylinders of the front suspension fork of the present invention.

Referring to FIGS. **3**, **3A** and **4**, the controller **5** comprises a first collar **10** having a though hole **100** and a second collar **20**. A slot **11** is defined radially through the first collar **10** and two lugs **114** extend from the outside of the first collar **10**. The slot **11** is located between the two lugs **114**. A stop device **13** such a pin which extends through two lugs **114** on the first collar **10**. The stop device **13** is located cross over the slot **11**. Each of two facing insides of the slot **11** has a recess **112** defined therein and a groove **113** is in communication with the respective one of the recesses **112**. A positioning groove **111** is defined in an inner periphery of the first collar **10**.

A second collar **20** is rotatably engaged in the through hole **100** via the slot **11** and a lever **22** extends radially from the second collar **20**. The lever **22** extends through the slot **11** and an engaging member **23** is located on the second collar **20** and beside the lever **22**. A slot **210** is defined through the second collar **20** and a positioning screw **12** radially extends through the first collar **10**, the slot **210** in the second collar **20** and a hole **31** in a soft ring **30** which is engaged with the through hole **200** so as to contact the handlebar "C" that extends through the through hole **200** of the second collar **20** to position the controller **5** on the handlebar "C". An positioning groove **21** is defined in an outer periphery of the second collar **20** so that an end of the control cable "B" extends from the end **116** of the first collar **10** and is engaged with the positioning grooves **111** and **21**. The end of the control cable "B" is fixed to a root portion **221** of the lever **22**. As shown in FIGS. **5** and **6**, the other end of the control cable "B" is fixedly to a cap **61** of one of two suspension cylinders **50** of the front suspension system.

The engaging member **23** has two wings which are movably inserted in the recesses **12** and sized to be slid in the grooves **113**. A spring plate **231** extends at angle from the engaging member **23**.

Referring to FIGS. **5**, **6** and **6A**, each of the cylinders **50** of the front suspension system includes an outer tube **51** which is connected to the hub of the front wheel of the bicycle and an inner tube **52** which is movably inserted in the outer tube **51**. The cap **61** is connected to a base member **62** which is threadedly connected to a top of the inner tube **52**. A positioning bolt **611** extends through a center of the cap **61** and is fixed to the base member **62** so that the cap **61** is rotatable about the positioning bolt **611**. A clamp ring **65** is securely mounted to the base member **62** and the control

cable "B" extends into a block **651** on the clamp ring **65** and wraps the periphery of the cap **61**, such that when the control cable "B" is pulled, the cap **61** is rotated.

A rod **64** is connected to an underside of the cap **61** and inserted in a tube **63** which is located in the inner tube **52**. A separation member **70** is connected to a lower end of the tube **63** and divides an inner space of the inner tube **51** into a first chamber "D" and a second chamber "E". The separation member **70** has an open distal end and a central passage. The tube **63** has first holes **630** defined through a wall thereof and the rod **64** has second holes **640** defined radially therethrough. The first chamber "D" is in communication with the second chamber "E" by aligning the second holes **640** with the first holes **630**, such that the hydraulic fluid in the second chamber "E" can be pressed to enter the first chamber "D" when the outer tube **51** is moved relative to the inner tube **52**. A torsion spring **612** is connected to the underside of the cap **61** and one end of the spring **612** is positioned by a pin **613** extending from a top of the cap **61**, the other end of the spring **612** is positioned to the base member **62** by another pin **662** on the base member **62**. The torsion spring **612** allows the cap **61** to be rotated when the lever **22** is rotated from the lockout position as shown in FIG. **4**B to the operative position as shown in FIG. **4**.

Referring to FIGS. **4**A and **4**B, when the cyclist wants to lock the cylinder **50**, he or she simply rotates the lever **22** as indicated by the arrow head. The rotation of the lever **22** pulls the control cable "B" to rotate the cap **61** and the rotation of the cap **61** rotates the rod **64** such that the holes **640** are shifted to the position as shown in FIG. **6**B. The holes **640** of the rod **64** are not in alignment with the holes **630** of the tube **63** so that the hydraulic fluid in the two chambers "D" and "E" cannot communicate with each other. Therefore, the cylinder **50** is locked and cannot absorb shocks. When rotating the lever **22**, the wings of the engaging member **23** are slid in the grooves **113** and when the lever **22** is positioned in its lockout position as shown in FIG. **4**B, the stop device **13** is stuck between the lever **22** and a distal end of the spring plate **231**. When rotating the lever **22** in opposite direction and back to its operative position, the cap **61** is rotated by the torsion spring **612** automatically.

The cyclist can easily and conveniently change the setting of the cylinders **50** without changing the pose when riding the bicycle and this feature improves the shortcomings of the conventional ones.

While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention.

What is claimed is:

**1**. A combination of a controller and a bicycle front suspension device, comprising:

a first collar having a through hole which is adapted to be mounted on a bicycle handlebar and a slot defined radially through the first collar, a stop device connected to the first collar and positioned to cross over the slot;

a second collar rotatably engaged in the through hole and a lever extending radially from the second collar, the lever extending through the slot and an engaging member which is located on the second collar and beside the lever, and

a control cable having an end fixed to the second collar and extending between an outside of the second collar and an inside of the first collar, the other end of the control cable fixed to a cap of one of two suspension cylinders, the cap being rotated between an operative position for allowing the suspension cylinder to absorb shock, and a lockout position for allowing the suspension cylinder to be locked.

**2**. The combination as claimed in claim **1**, wherein each of two facing insides of the slot having a recess defined therein and a groove is in communication with the respective one of the recesses, the engaging member has two wings which are movably inserted in the recesses and sized to be slid in the grooves, a spring plate extending at angle from the engaging member, the stop device being a pin which extends through two lugs on the first collar, the slot located between the two lugs, the stop device being stuck between the lever and a distal end of the spring plate when the lever is rotated to the lockout position.

**3**. The combination as claimed in claim **1**, wherein a positioning groove is defined in an outer periphery of the second collar and the control cable is engaged with the positioning groove.

**4**. The combination as claimed in claim **1**, wherein each of the cylinders includes an outer tube and an inner tube which is movably inserted in the outer tube, the cap having a rod connected thereto which is inserted in a tube which is located in the inner tube, a separation member connected to the tube and dividing an inner space of the inner tube into a first chamber and a second chamber, the separation member having an open distal end and a central passage, the tube having first holes defined through a wall thereof and the rod having second holes defined radially therethrough, the first chamber being in communication with the second chamber by aligning the second holes with the first holes.

**5**. The combination as claimed in claim **4**, wherein a positioning bolt extends through a center of the cap and is fixed to a base member which is threadedly connected to the inner tube, the cap being rotatable about the positioning bolt.

**6**. The combination as claimed in claim **5**, wherein a torsion spring is connected to the cap so that the cap is rotated when the lever is rotated to the operative position.

* * * * *